Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method of analyzing operating characteristics of a motor actuated system comprising the steps of:

sensing a current drawn by a motor for driving the system to obtain a current waveform in the time domain;

identifying a predetermined number of brush-switching peaks ~~oscillations~~ in the current waveform ~~caused by segment switching~~ corresponding to a predetermined rotational travel of the motor; and

~~determining a number of oscillations corresponding to one rotation of the motor; and~~

~~normalizing the current waveform to one rotation of the motor to define a normalized waveform in the spatial domain.~~

setting a width of the current waveform, defined by the predetermined number of brush-switching peaks, equal to a predetermined number of equally spaced increments to normalize the current waveform from the time domain to a set of data points defining a waveform in the spatial domain corresponding to the predetermined rotational travel of the motor.

Claims 2-3 (Canceled)

4. (Currently amended) The method of claim 1 wherein the step of identifying ~~oscillations~~ brush-switching peaks comprises filtering the current waveform to define a filtered waveform.

5. (Currently amended) The method of claim 1 including the step of performing a frequency analysis on the normalized waveform in the spatial domain.

6. (Currently amended) The method of claim 5 wherein the frequency analysis comprises calculating a frequency dependent distribution of the normalized

waveform in the spatial domain to determine the relative energy distribution of the waveform in the spatial domain.

7. (Currently amended) The method of claim 6 wherein the frequency analysis further comprises identifying frequencies associated with components of the system and evaluating the energy content of the normalized waveform in the spatial domain at the identified frequencies.

8. (Currently amended) The method of claim 6 wherein the frequency dependent distribution comprises a power-spectral-density of the normalized waveform in the spatial domain.

9. (Currently amended) The method of claim 5 wherein the frequency analysis is performed over the entire normalized waveform in the spatial domain comprising multiple rotations of the motor.

10. (Currently amended) The method of claim 5 wherein the normalized waveform in the spatial domain is divided into discrete overlapping parts, and the frequency analysis is performed on each part of the normalized waveform in the spatial domain.

11. (Original) The method of claim 5 wherein the frequency analysis comprises identifying system characteristics corresponding to identifiable rotational positions of the motor.

Claims 12-16 (Canceled)

17. (New) The method of claim 1 wherein the predetermined number of brush-switching peaks corresponds to a single rotation of the motor.

18. (New) The method of claim 1 including the step of applying a time domain based processing analysis to the waveform in the spatial domain to analyze characteristics of a system driven by the motor.

19. (New) The method of claim 1 further including the step of sequentially ordering a plurality of sets of data points, where each set of data points corresponds to the predetermined rotational travel of the motor, to define a continuous current waveform in the spatial domain.

20. (New) A method of analyzing operating characteristics of a motor actuated system comprising the steps of:

sensing a current drawn by a motor for driving the system to obtain a current waveform in the time domain;

filtering the current waveform about a band corresponding to a rotational frequency of the motor;

identifying a predetermined number of peaks in the filtered current waveform corresponding to a predetermined rotational travel of the motor;

defining a width of the unfiltered current waveform using the predetermined number of peaks of the filtered current waveform; and

setting the defined width of the unfiltered current waveform equal to a predetermined number of equally spaced increments to normalize the unfiltered current waveform from the time domain to a set of data points defining a waveform in the spatial domain corresponding to the predetermined rotational travel of the motor.

21 (New) The method of claim 20 wherein the predetermined number of peaks corresponds to a single rotation of the motor.

22. (New) The method of claim 20 including the step of applying a time domain based processing analysis to the waveform in the spatial domain to analyze characteristics of a system driven by the motor.

23. (New) The method of claim 20 further including the step of sequentially ordering a plurality of sets of data points, where each set of data points corresponds to the predetermined rotational travel of the motor, to define a continuous current waveform in the spatial domain.

24. (New) A method of analyzing operating characteristics of a motor actuated system comprising the steps of:

sensing a current drawn by a motor for driving the system to obtain a current waveform in the time domain;

analyzing the current waveform to determine a dominant frequency band corresponding to a rotational frequency of the motor;

filtering the current waveform about the band corresponding to the rotational frequency of the motor;

identifying a predetermined number of peaks in the filtered current waveform corresponding to a predetermined rotational travel of the motor;

defining a width of the unfiltered current waveform using the predetermined number of peaks of the filtered current waveform; and

setting the defined width of the unfiltered current waveform equal to a predetermined number of equally spaced increments to normalize the unfiltered current waveform from the time domain to a set of data points defining a waveform in the spatial domain corresponding to the predetermined rotational travel of the motor.

25. (New) The method of claim 24 wherein the predetermined number of peaks corresponds to a single rotation of the motor.

26. (New) The method of claim 24 including the step of applying a time domain based processing analysis to the waveform in the spatial domain to analyze characteristics of a system driven by the motor.

27. (New) The method of claim 24 further including the step of sequentially ordering a plurality of sets of data points, where each set of data points corresponds to the predetermined rotational travel of the motor, to define a continuous current waveform in the spatial domain.